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(54) **A pattern recognition apparatus and method for doing the same.**

(57) A learning pattern is classified into a plurality of patterns by a classifying means (102). The result of the classification, as well as the representative features quantity calculated by a representative feature quantity operating unit (103), are stored in a dictionary storing unit (104) in respective regions. Upon recognition, after feature quantities of unknown input patterns are extracted from a feature quantity extracting unit (101), a similarity operating unit (105) arithmetically operates the similarity between the input pattern and respective learning patterns for respective regions. The point accumulating means (106) searches a dictionary storing unit (104) and accumulates points corresponding to a rank for respective learning patterns included in class having the upper rank from the highest to a lower similarity for respective regions. The recognition result candidate outputting unit (107) outputs the recognition result candidate in accordance with the order of the higher accumulated point for the learning pattern. Therefore, the present pattern recognition can decrease the memory capacity of the dictionary and the number of the calculations.

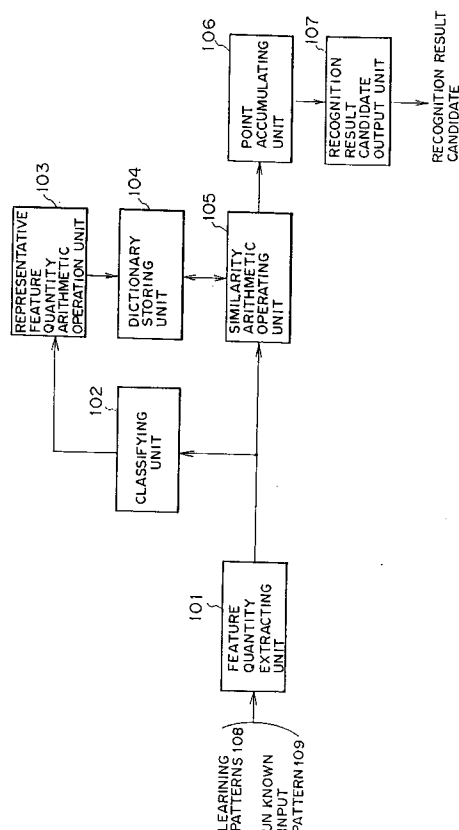


Fig. 1A

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	SYSTEMS & COMPUTERS IN JAPAN. vol. 19, no. 2, February 1988, SILVER SPRING, MD, USA pages 42 - 49 , XP000111801 T. EJIMA ET AL. 'Rough Classification of Handwritten Characters by Divide-and-Unify Method' * page 43, right column, line 1 - page 46, right column, line 27; figures 2B,3,4 * ---	1,7	G06K9/62 G06K9/68 G10L3/00
A	PATENT ABSTRACTS OF JAPAN vol. 12, no. 284 (P-740)4 August 1988 & JP-A-63 061 388 (RICOH CO. LTD.) 17 March 1988 * abstract * ---	3	
A	US-A-4 040 009 (KADOTA ET AL.) * abstract * ---	6	
A	PROCEEDINGS ICASSP 87 :INTERNATIONAL CONFERENCE ON ACOUSTICS, SPEECH AND IMAGE PROCESSING, APRIL 6-9 1987, IEEE vol. 2, DALLAS, TEXAS, USA pages 1127 - 1130 SADAOKI FURUI 'A VQ PREPROCESSOR USING CEPSTRAL DYNAMIC FEATURES FOR LARGE VOCABULARY WORD RECOGNITION' * abstract * * page 1129, right column, paragraph 1; figure 6 * --- -/--	11-15, 17,18	TECHNICAL FIELDS SEARCHED (Int. Cl.5) G06K G10L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 02 FEBRUARY 1993	Examiner SONIUS M.E.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid,
namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions,
namely:

See Sheet B.

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid,
namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims,
namely claims:



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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	IEEE TRANSACTIONS ON ACOUSTICS, SPEECH AND SIGNAL PROCESSING vol. 33, no. 3, June 1985, NEW YORK US pages 540 - 560 KUK-CHIN PAN ET AL. 'A Vector-Quantization-Based Preprocessor for Speaker-Independent Isolated Word Recognition' * chapter II * -----	9-15, 17, 18	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 02 FEBRUARY 1993	Examiner SONIUS M.E.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			



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LACK OF UNITY OF INVENTION A POSTERIORI

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-8,16:

Two-stage pattern recognition apparatus/method
partly characterized by image related features

2. Claims 9-15,17,18:

Two-stage pattern recognition apparatus/method,
characterized by speech related features